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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/419,620	10/15/1999	JONG WOOK PARK	0465-0716P	1535

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EXAMINER
NGUYEN, DUNG T

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/419,620	Applicant(s) Park
	Examiner Dung Nguyen	Art Unit 2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 10, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 3-7, 9-11, 13-15, and 17* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 3-7, 9-11, 13-15, and 17* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/10/2003 has been entered.

2. Applicant's amendment dated 06/10/2003 has been received and entered.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3-7, 9-11 and 14-15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA), in view of Applicant's submitted prior art, Katsuto, JP 5-323324, as stated in the final office action.

APA discloses a method of forming a liquid crystal display (LCD) comprising the step of forming a LCD cell and heating the LCD cell (specification, page 3, lines 4-12). Furthermore, the heating step (t=100°C)(specification, page 3, line 8) is performed at the temperature that is less than a curing temperature of the sealant (t=180°C)(specification, page 8, line 4). It should be

noted that the step of forming an alignment layer, sealant, laminating and injection a liquid crystal layer would be inherent to the step of forming the LCD cell.

Regarding claims 1, 10 and 14-15, APA fail to disclose the heating step being performed at a temperature is greater than about 10° C above a nematic isotropic transition temperature as well as the step of quickly cooling the LCD cell. Katsuto does disclose a LCD element is immediately plated flat on the surface of a rapid cooling plate to rapidly cool the LCD element from the heating temperature (see abstract). Therefore it would have been obvious to one skilled in the art to rapidly cool an APA's LCD cell from a heating temperature as shown by Katsuto in order to enable the efficient and easy reorientation of a liquid crystal layer (see purpose). In addition, APA do disclose that the LCD cell is heating at a temperature higher than a nematic isotropic transition temperature (specification, page 3, line 5). Therefore, such disclosed range in APA makes possible the claimed range of greater than about 10° C above a nematic isotropic transition temperature, and overlapping ranges are at least obvious. In re Malagari, 499 Fed.2d 1297, 182 USPQ 549 CCPA 1974.

Regarding claims 3-7, 9 and 11, APA does not disclose the heating temperature and based material for the alignment layer. One of ordinary skill in the art would have realized the desire to form a polyimide based material or photo-alignment material (e.g., polysiloxane) for an alignment layer depending on the method of forming such alignment layer (i.e, rubbing or lighting). As a result, the heating temperature would be follow on such alignment material (low heating temperature, e.g. 100° C, for rubbing method and/or high heating temperature, e.g. greater than

170° C for lighting method). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to heat an LCD cell at a predetermine temperature as well as to use a polyimide based for the rubbing alignment layer and polysiloxance based material for the lighting alignment layer because it is a common practice in the art to perform a stable alignment layer in the LCD cell.

5. Claims 13 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA), in view of Applicant's submitted prior art, Katsuto, JP 5-323324, further in view of Mishina et al., US Patent No. 5,954,999, as stated in the final office action.

Regarding claims 13 and 17, the modification to APA disclose the claimed invention as described above except for the heating step is performed at a temperature which is substantially equal to a baking temperature of the alignment layer. Mishina disclose a baking temperature of the alignment layer can be selected from -5° C to 100°C (col. 4, line 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to bake an alignment layer at 100° C as shown by Mishina, so as the heating temperature of the APA's LCD cell is substantially equal to a baking temperature of the alignment layer in order to product a liquid crystal alignment film which has a high tilt angle and excellent in electrical properties of LCD devices (see Technical Field).

Response to Arguments

6. Applicant's arguments filed 06/10/2003 have been fully considered but they are not persuasive.

Regarding claims 1 and 14, Applicant contends that Applicant's disclosed art does not teach the step of heating the liquid crystal cell, wherein the heating step is performed at a temperature that is greater than 10°C above a nematice-isotropic transition temperature to form a uniform tilt angle of the alignment layer. The Examiner agreed that a problem in the related art is that non-uniform tilt angles might occur in the alignment layers (according to the specification, page 3); however, Applicant is noted that Applicant's disclosed art does disclose the LCD cell being heated at a temperature higher than a nematic isotropic transition temperature (specification, page 3, line 5)(see final office action, page 3) as claimed. In other words, the Applicant's method and APA's method would be the same as well, so as the same result would be employed.

Accordingly, the rejection of claims 1, 3-7, 9-11, 13-15 and 17 stand.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dung Nguyen whose telephone number is (703) 305-0423. The Examiner can normally be reached on Monday-Thursday

If attempts to reach the Examiner by telephone are unsuccessful, The Examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7730 for regular communications and 703-308-7726 for After Final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-0956.

DN
07/25/2003

Dung Nguyen
Patent Examiner
GAU 2871